

Adapted for A NEW GENERATION
from the New York Times Bestseller

an inconvenient truth

the crisis of
global warming



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AL GORE *

An.Inconvenient.Truth by Al Gore

About Al Gore

Former Vice President Al Gore is Chairman of Current TV. He also serves as Chairman of Generation Investment Management. Al Gore is a member of the Board of Directors of Apple Computer, Inc. and a Senior Advisor to Google, Inc. Al Gore is a Visiting Professor at Middle Tennessee State University in Murfreesboro, Tennessee.

Al Gore was first elected to the U.S. House of Representatives in 1976 and served four terms. He was elected to the U.S. Senate in 1984 and 1990, and was inaugurated as the 45th Vice President of the United States on January 20, 1993. During the Administration, Al Gore was a central member of President Clinton's economic team. He served as President of the Senate, a Cabinet member, a member of the National Security Council, and as the leader of a wide range of Administration initiatives.

*Al Gore led the Clinton Administration's efforts to protect the global environment and authored a best selling book on the topic, *Earth in the Balance: Ecology and the Human Spirit* (1992).*

Al Gore and his wife, Tipper, reside in Nashville, Tennessee.

http://www.climatecrisis.net/an_inconvenient_truth/about_the_film.php

About the Film

From director Davis Guggenheim, An Inconvenient Truth is a passionate and inspirational look at former Vice President Al Gore's fervent crusade to halt global warming's deadly progress by exposing the myths and misconceptions that surround it. In this intimate portrait of Gore and his "travelling global warming show," Gore comes across as never before in the media - funny, engaging, open and intent on alerting citizens to this "planetary emergency" before it's too late.

Interspersed with the bracing facts and future predictions is the story of Gore's personal journey: from an idealistic college student who first saw a massive environmental crisis looming; to a young Senator facing a harrowing family tragedy that altered his perspective; to the man who almost became President but instead returned to the most important cause of his life. With an emphasis on hope, An Inconvenient Truth ultimately shows us that global warming is no longer a political issue but rather, the biggest moral challenge facing our civilization today.

After having its U.S. debut at the 2006 Sundance Film Festival and international premiere at Cannes, An Inconvenient Truth opened to rave reviews and enthusiastic audiences everywhere. A smash hit, the film went on to win Academy Awards® for Best Documentary feature and Best Song. It also became a global phenomenon, one of the highest grossing documentaries of all time with a worldwide audience estimated at 5 million people. http://www.climatecrisis.net/an_inconvenient_truth/about_the_film.php

The Impact

The impact of An Inconvenient Truth is unprecedented. Since its release in 2005, the film has helped to galvanize governments, leaders, organizations and individuals worldwide to take action on global warming. More than a billion people are now aware of the issue and have been motivated to act. Learn more about the some of these historic developments.

- Over 106,000 tons of carbon were offset in the year following the film's release, which is equivalent to 225 million car miles.
- 4200+ tons of carbon were offset just by people switching to compact fluorescent light bulbs.
- Over 15 climate change bills have been introduced in Congress, with the historic Markey-Waxman Bill passing the House in June, 2009.
- Five countries - England, Scotland, Czech Republic, New Zealand, and Germany - and the Canadian province of British Columbia incorporated An Inconvenient Truth into their secondary schools' curricula.
- President Obama created the new position of Assistant to the President for Climate and Energy.
- The United States House of Representatives established a Select Committee on Energy Independence and Global Warming.
- The U.S. Senate established a Select Committee On Energy Independence and Global Warming.

- Over 2600 people have been trained to give The Climate Project presentation and 4 million people on all seven continents have heard the presentation.
- The issue of global warming reached more than a billion people worldwide.

http://www.climatecrisis.net/an_inconvenient_truth/the_impact.php

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An.Inconvenient.Truth by Al Gore

Subtitle for every one

Subtitle Collected by Arakan Indobhasa <http://arakanindobhasaa.blogspot.com/>

You look at that river. Gently flowing by. You notice the leaves rustling with the wind. You hear the birds. You hear the tree frogs. In the distance, you hear a cow. You feel the grass. The mud gives a little bit on the river bank It's quiet. It's peaceful. And all of a sudden, it's a gear shift inside you. And it's like taking a deep breath and going, "Oh, yeah, I forgot about this." This is the first picture of the Earth from space that any of us ever saw. It was taken on Christmas Eve, 1968 during the Apollo 8 Mission....within relatively comfortable boundaries. But we are filling up that thin shell of atmosphere with pollution.

Ladies and gentlemen, Mr. Al Gore. I am Al Gore. I used to be the next president of the United States Of America. I don't find that particularly funny. I've been trying to tell this story for a long time, and I feel as if I've failed to get the message across. I was in politics for a long time and I'm proud of my service. You gotta be kidding me. This is a national disaster. Get every doggone Greyhound bus line in the country, and get their... moving to New Orleans.

That's them thinking small, man, and this is a major, major, major deal. What do you need right now? There are good people, who are in politics in both parties who hold this at arm's length because if they acknowledge it and recognize it, then the moral imperative to make big changes is inescapable. ...unless you fix the biggest damn crisis in the history of this country. ...scouted out landing spots and they lost radio contact when they went around the dark side of the moon.

And there was inevitably some suspense. Then when they came back in radio contact, they looked up and they snapped this picture, and it became known as Earth Rise. And that one picture exploded in the consciousness of humankind. It lead to dramatic changes. Within 18 months of this picture, the modern environmental movement had begun. The next picture was taken on the last of the Apollo missions, Apollo 17. This one was taken on December 11, 1972, and it is the most commonly published photograph in all of history. And it's the only picture of the Earth from space that we have where the sun was directly behind the spacecraft so that the

Earth is fully lit up and not partly in darkness. The next image I'm gonna show you has almost never been seen.

It was taken by a spacecraft called The Galileo that went out to explore the solar system. And as it was leaving Earth's gravity, it turned its cameras around and took a time lapse picture of one day's worth of rotation, here compressed into 24 seconds. Isn't that beautiful? This image is a magical image in a way. It was made by a friend of mine, Tom Van Sant. He took 3,000 separate satellite pictures taken over a three-year period, digitally stitched together. And he chose images that would give a cloud-free view of every square inch of the Earth's surface. All of the land masses accurately portrayed. When that's all spread out, it becomes an iconic image.

I show this because I wanna tell you a story about two teachers I had. One that I didn't like that much, the other who is a real hero to me. I had a grade school teacher who taught geography by pulling a map of the world down in front of the blackboard. I had a classmate in the sixth grade who raised his hand and he pointed to the outline of the east coast of South America and he pointed to the west coast of Africa and he asked,

"Did they ever fit together?" and he asked,

"Did they ever fit together?"

And the teacher said,

"Of course not. That's the most ridiculous thing I've ever heard."

That student went on to become a drug addict and a ne'er-do-well. The teacher went on to become science advisor in the current administration. But, you know, the teacher was actually reflecting the conclusion of the scientific establishment of that time. Continents are so big, obviously they don't move. But, actually, as we now know they did move.

They moved apart from one another. But at one time they did, in fact, fit together. But that assumption was a problem. It reflected the well-known wisdom that what gets us into trouble is not what we don't know, it's what we know for sure that just ain't so. This is actually an important point, believe it or not, because there is another such assumption that a lot of people have in their minds right now about global warming that just ain't so. The assumption is something like this. The Earth is so big we can't possibly have any lasting harmful impact on the Earth's environment. And maybe that was true at one time, but it's not anymore.

And one of the reasons it's not true anymore is that the most vulnerable part of the Earth's ecological system is the atmosphere. Vulnerable because it's so thin. My friend, the late Carl Sagan, used to say, "If you had a big globe with a coat of varnish on it, "the thickness of that varnish relative to that globe "is pretty much the same "as the thickness of the Earth's atmosphere "compared to the Earth itself." And it's thin enough that we are capable of changing its

composition. That brings up the basic science of global warming. And I'm not gonna spend a lot of time on this because you know it well.

The sun's radiation comes in in the form of light waves and that heats up the Earth. And then some of the radiation that is absorbed and warms the Earth is reradiated back into space in the form of infrared radiation. And some of the outgoing infrared radiation is trapped by this layer of atmosphere and held inside the atmosphere. And that's a good thing because it keeps the temperature of the Earth within certain boundaries, keeps it relatively constant and livable. But the problem is this thin layer of atmosphere is being thickened by all of the global warming pollution that's being put up there. And what that does is it thickens this layer of atmosphere, more of the outgoing infrared is trapped. And so the atmosphere heats up worldwide. That's global warming.

Now, that's the traditional explanation. Here's what I think is a better explanation. You're probably wondering why your ice cream went away. Well, Susie, the culprit isn't foreigners. It's global warming.

- Global...

- Yeah.

Meet Mr. Sunbeam.

He comes all the way from the sun to visit Earth.

Hello, Earth.

Just popping in to brighten your day.

And now I'll be on my way.

Not so fast, Sunbeam.

We're greenhouse gases. You ain't going nowhere.

Oh, God, it hurts.

Pretty soon, Earth is chock-full of Sunbeams

Their rotting corpses heating our atmosphere.

How do we get rid of the greenhouse grasses?

Fortunately, our handsomest politicians came up with a cheap, last-minute way to combat global warming. Ever since 2063, we simply drop a giant ice cube into the ocean every now and then. Just like Daddy puts in his drink every morning. And then he gets mad. Of course, since the

greenhouse gases are still building up, it takes more and more ice each time. Thus, solving the problem once and for all.

- But...

- Once and for all!

This is the image that started me in my interest in this issue. And I saw it when I was a college student because I had a professor named Roger Revelle who was the first person to propose measuring carbon dioxide in the Earth's atmosphere. He saw where the story was going after the first few chapters. After the first few years of data, he intuited what it meant for what was yet to come. They designed the experiment in 1957. He hired Charles David Keeling who was very faithful and precise in making these measurements for decades. They started sending these weather balloons up every day and they chose the middle of the Pacific because it was the area that was most remote. And he was a very hard-nosed scientist.

He really emphasized the hard data. It was a wonderful time for me because, like a lot of young people, I came into contact with intellectual ferment, ideas that I'd never considered in my wildest dreams before. And he showed our class the results of his measurements after only a few years. It was startling to me. Now he was startled and made it clear to our class what he felt the significance of it was. And I just soaked it up like a sponge. He drew the connections between the larger changes in our civilization and this pattern that was now visible in the atmosphere of the entire planet. And then he projected into the future where this was headed unless we made some adjustments. And it was just as clear as day. After the first seven, eight, nine years, you could see the pattern that was developing.

But I asked a question. Why is it that it goes up and down once each year? And he explained that if you look at the land mass of the Earth, very little of it is south of the equator. The vast majority of it is north of the equator, and most of the vegetation is north of the equator. And so, when the Northern Hemisphere is tilted toward the sun, as it is in our spring and summer, the leaves come out and they breathe in carbon dioxide, and the amount in the atmosphere goes down. But when the Northern Hemisphere is tilted away from the sun, as it is in our fall and winter, the leaves fall and exhale carbon dioxide, and the amount in the atmosphere goes back up again. And so, it's as if the entire Earth once each year breathes in and out. So we started measuring carbon dioxide in 1958. And you can see that by the middle '60s, when he showed my class this image, it was already clear that it was going up.

I respected him and learned from him so much, I followed this. And when I went to the Congress in the middle 1970s, I helped to organize the first hearings on global warming and asked my professor to come and be the leadoff witness. And I thought that would have such a big impact, we'd be on the way to solving this problem, but it didn't work that way. But I kept having hearings. And in 1984 I went to the Senate and really dug deeply into this issue with science roundtables and the like. I wrote a book about it, ran for President in 1988, partly to try to gain

some visibility for that issue. And in 1992 went to the White House. We passed a version of a carbon tax and some other measures to try to address this. Went to Kyoto in 1997 to help get a treaty that's so controversial, in the US at least.

In 2000, my opponent pledged to regulate CO₂ and then... That was not a pledge that was kept. But the point of this is all this time you can see what I have seen all these years. It just keeps going up. It is relentless. And now we're beginning to see the impact in the real world. This is Mount Kilimanjaro more than 30 years ago and more recently. And a friend of mine just came back from Kilimanjaro with a picture he took a couple of months ago. Another friend, Lonnie Thompson, studies glaciers. Here's Lonnie with a last sliver of one of the once mighty glaciers. Within the decade there will be no more snows of Kilimanjaro. This is happening in Glacier National Park.

I climbed to the top of this in 1998 with one of my daughters. Within 15 years, this will be the park formerly known as Glacier. Here is what's been happening year by year to the Columbia Glacier. It just retreats every single year. And it's a shame 'cause these glaciers are so beautiful. But those who go up to see them, here's what they're seeing every day, now. In the Himalayas there's a particular problem because 40% of all the people in the world get their drinking water from rivers and spring systems that are fed more than half by the melt water coming off the glaciers. And within this next half century those 40% of the people on Earth are gonna face a very serious shortage because of this melting. Italy, the Italian Alps. Same sight today. An old postcard from Switzerland. Throughout the Alps, we're seeing the same story.

It's also true in South America. This is Peru 15 years ago. And the same glacier today. This is Argentina 20 years ago. Same glacier today. Seventy-five years ago in Patagonia on the tip of South America. This vast expanse of ice is now gone. There's a message in this. There's a message in this. It is worldwide. And the ice has stories to tell us. My friend, Lonnie Thompson, digs core drills in the ice. They dig down and they bring the core drills back up and they look at the ice and they study it. When the snow falls, it traps little bubbles of atmosphere and they can go in and measure how much CO₂ was in the atmosphere the year that that snow fell. What's even more interesting, I think, is they can measure the different isotopes of oxygen and figure out a very precise thermometer and tell you what the temperature was the year that that bubble was trapped in the snow as it fell.

When I was in Antarctica, I saw cores like this. And a guy looked at it. He said,

"Right here is where the US Congress passed the Clean Air Act."

And I couldn't believe it. But you can see the difference with the naked eye. Just a couple of years after that law was passed, it's very clearly distinguishable. They can count back year by year the same way a forester reads tree rings. And you can see each annual layer from the

melting and re-freezing, so they can go back in a lot of these mountain glaciers 1,000 years. And they constructed a thermometer of the temperature. The blue is cold and the red is warm. Now, I show this for a couple of reasons. Number one, the so-called skeptics will sometimes say,

"Oh, this whole thing, this is a cyclical phenomenon.

"There was a medieval warming period, after all."

Well, yeah, there was. There it is, right there. There are two others. But compared to what's going on now, there's just no comparison. So if you look at 1,000 years' worth of temperature and compare it to 1,000 years of CO₂, you can see how closely they fit together. Now, 1,000 years of CO₂ in the mountain glaciers, that's one thing. But in Antarctica, they can go back 650,000 years. This incidentally is the first time anybody outside of a small group of scientists has seen this image. This is the present day era, and that's the last ice age. Then it goes up. We're going back in time now 650,000 years. That's the period of warming between the last two ice ages. That's the second and third ice age back. Fourth, fifth, sixth and seventh ice age back.

Now, an important point. In all of this time, 650,000 years, the CO₂ level has never gone above 300 parts per million. Now, as I said, they can also measure temperature. Here's what the temperature has been on our Earth. Now, one thing that kind of jumps out at you is...Well, let me put it this way. If my classmate from the sixth grade that talked about Africa and South America were here, he would say,

"Did they ever fit together?"

"Most ridiculous thing I've ever heard."

But they did, of course. And the relationship is actually very complicated. But there is one relationship that is far more powerful than all the others and it is this. When there is more carbon dioxide, the temperature gets warmer because it traps more heat from the sun inside. In the parts of the United States that contain the modern cities of Cleveland, Detroit, New York, in the northern tier, this is the difference between a nice day and having a mile of ice over your head. Keep that in mind when you look at this fact. Carbon dioxide, having never gone above 300 parts per million, here is where CO₂ is now. Way above where it's ever been as far back as this record will measure. Now, if you'll bear with me, I wanna really emphasize this point.

The crew here has tried to teach me how to use this contraption here. So, if I don't kill myself, I'll...It's already right here. Look how far above the natural cycle this is, and we've done that. But, ladies and gentlemen, in the next 50 years, really, in less than 50 years, it's gonna continue to go up. When some of these children who are here are my age, here is what it's going to be in less than 50 years. You've heard of off the charts. Within less than 50 years, it'll be here. There's not a single fact or date or number that's been used to make this up that's in any controversy. The so-called skeptics look at this and they say,

"So? That seems perfectly okay."

"So? That seems perfectly okay."

Well, again, if on the temperature side, if this much on the cold side is a mile of ice over our heads, what would that much on the warm side be?

Ultimately this is really not a political issue so much as a moral issue. If we allow that to happen, it is deeply unethical. I had such faith in our democratic system, our self-government. I actually thought and believed that the story would be compelling enough to cause a real sea change in the way the Congress reacted to that issue. I thought they would be startled, too. And they weren't. The struggles, the victories that aren't really victories, the defeats that aren't really defeats. They can serve to magnify the significance of some trivial step forward, exaggerate the seeming importance of some massive setback. April 3, 1989. My son pulled loose from my hand and chased his friend across the street. He was six years old.

The machine was breathing for him. We were possibly going to lose him. He finally took a breath. We stayed in the hospital for a month. It was almost as if you could look at that calendar and just go...And everything just flew off. Seemed trivial, insignificant. He was so brave. He was such...He was such a brave guy. It just turned my whole world upside down and then shook it until everything fell out. My way of being in the world, it just changed everything for me.

How should I spend my time on this Earth? I really dug in, trying to learn about it much more deeply. I went to Antarctica. Went to the South Pole, the North Pole, the Amazon. Went to places where scientists could help me understand parts of the issue that I didn't really understand in depth. The possibility of losing what was most precious to me. I gained an ability that maybe I didn't have before. But when I felt it, I felt that we could really lose it, that what we take for granted might not be here for our children. These are actual measurements of atmospheric temperatures since our Civil War.

In any given year, it might look like it's going down, but the overall trend is extremely clear. And in recent years, it's uninterrupted and it is intensifying. In fact, if you look at the 10 hottest years ever measured in this atmospheric record, they've all occurred in the last 14 years. And the hottest of all was 2005. We have already seen some of the heat waves that are similar to what scientists are saying are gonna be a lot more common. Couple of years ago in Europe they had that massive heat wave that killed 35,000 people. India didn't get as much attention but the same year the temperature there went to 122 degrees Fahrenheit. This past summer in the American West, there were a lot of cities that broke all-time records for high temperatures and number of consecutive days with a 100-degree temperature or more.

Two hundred cities and towns in the west set all-time records. And in the east there were a lot of cities that did the same thing. Including, incidentally, New Orleans. So the temperature increases

are taking place all over the world, including in the oceans. This is the natural range of variability for temperature in the oceans. You know, people say,

"Oh, it's just natural."

"It goes up and down, so don't worry about it."

This is the range that would be expected over the last 60 years, but the scientists who specialize in global warming have computer models that long ago predicted this range of temperature increase. Now I'm gonna show you, recently released, the actual ocean temperatures. And, of course, when the oceans get warmer, that causes stronger storms. We have seen in the last couple of years a lot of big hurricanes. Hurricane Jeanne and Frances and Ivan were among them. And the same year that we had that string of big hurricanes, we also set an all-time record for tornadoes in the United States. Japan again didn't get as much attention in our news media, but they set an all-time record for typhoons. Previous record was seven. Here are all 10 of the ones they had in 2004.

The science textbooks have had to be rewritten because they say that it's impossible to have a hurricane in the South Atlantic. But the same year the first one ever hit Brazil. Summer of 2005 has been one for the books. The first one was Emily that socked into Yucatn. Then Hurricane Dennis came along and it did a lot of damage, including to the oil industry. This is the largest oil platform in the world after Dennis went through. This one was driven into the bridge at Mobile. And then, of course, came Katrina. It's worth remembering that when it hit Florida, it was a Category One. But it killed a lot of people and caused billions of dollars' worth of damage. And then what happened? Before it hit New Orleans, it went over warmer waters. As the water temperature increases, the wind velocity increases and the moisture content increases. And you'll see Hurricane Katrina form over Florida. And then as it comes into the gulf over that warm water, it picks up that energy and gets stronger and stronger and stronger.

Look at that hurricane's eye. And, of course, the consequences were so horrendous, there are no words to describe it. Yeah, we're getting reports and calls that are just breaking my heart. From people saying, "I've been in my attic. I can't take it anymore."

"The water is up to my neck. I don't think I can hold out."

And that's happening as we speak. We told everybody the importance of the 17th Street Canal issue. We said,

"Please, please, take care of this "We don't care what you do. Figure it out." Something new for America. But how in God's name could that happen here?"

There had been warnings that hurricanes would get stronger. There were warnings that this hurricane, days before it hit, would breach the levees, would cause the kind of damage that it ultimately did cause. And one question we as a people need to decide is how we react when we

hear warnings from the leading scientists in the world. There was another storm in the 1930s of a different kind. A horrible, unprecedented storm in continental Europe, and Winston Churchill warned the people of England that it was different from anything that had ever happened before and they had to get ready for it. And a lot of people did not want to believe it. And he got real impatient with all the dithering. And he said this, Making mistakes in generations and centuries past would have consequences that we could overcome. We don't have that luxury anymore. We didn't ask for it, but here it is. Al Gore is the winner of the national popular vote. But the state of Florida, whomever wins there wins the White House. We call Florida, in the Al Gore column... Bulletin: Florida pulled back into the undecided column. George Bush is the president elect of the United States. He is... Florida goes Bush. The presidency is Bush. That's it. And at 2:18 this morning, we project... All right, we're officially saying that Florida is too close to call. While I strongly disagree with the court's decision, I accept it. I accept the finality of this outcome. ...do solemnly swear... I, George Walker Bush, do solemnly swear... that I will faithfully execute the Office of President...Well, that was a hard blow, but... What do you do? You...You make the best of it. It brought into clear focus the mission that I had been pursuing for all these years, and I started giving the slide show again. One often unnoticed effect of global warming is it causes more precipitation, but more of it coming in one-time big storm events. Because the evaporation off the oceans puts all the moisture up there, when storm conditions trigger the downpour, more of it falls down.

When storm conditions trigger the downpour, more of it falls down. The insurance industry has actually noticed this. Their recovered losses are going up. You see the damage from these severe weather events? And 2005 is not even on this yet. When it does, it'll be off that chart. Europe has just had a year very similar to the one we've had where they say nature's been going crazy. All kinds of unusual catastrophes, like a nature hike through the Book of Revelations. Flooding in Asia. Mumbai, India this past July. Thirty-seven inches of rain in 24 hours. By far, the largest downpour that any city in India has ever received. Lot of flooding in China, also. Global warming, paradoxically, causes not only more flooding, but also more drought. This neighboring province right next door had a severe drought at the same time these areas were flooding. One of the reasons for this has to do with the fact that global warming not only increases precipitation worldwide, but it also relocates the precipitation. And focus most of all on this part of Africa just on the edge of the Sahara. Unbelievable tragedies have been unfolding there, and there are a lot of reasons for it.

But Darfur and Niger are among those tragedies. And one of the factors that has been compounding them is the lack of rainfall and the increasing drought. This is Lake Chad, once one of the largest lakes in the world. It has dried up over the last few decades to almost nothing, vastly complicating the other problems that they also have. The second reason why this is a paradox. Global warming creates more evaporation off the oceans to seed the clouds, but it sucks moisture out of the soil. Soil evaporation increases dramatically with higher temperatures. And that has consequences for us in the United States, as well. So this is the Carthage exit. When I

was 14 years old, I totaled the family car right there. Went off that shoulder, turned it over. And see this Black Angus bull? We raised Black Angus. My father was named Breeder of the Month. He grew up on a farm.

All through his career in the Senate he continued to come back here and raise cattle. Learning it from your dad on the land that's really something special. My childhood upbringing was a little unusual in the sense that I spent eight months of each year in Washington DC in a small little hotel apartment. And then the other four months were spent here on this big, beautiful farm. I had a dog here. I had a pony here. I could shoot my rifle here. I could go swimming in the river here. Go out and lay down in the grass. As a kid, it took me a while to learn the difference between fun and work. The places where people live were chosen because of the climate pattern that has been pretty much the same on Earth since the end of the last ice age 11,000 years ago. Here, on this farm, the patterns are changing. And it seems gradual in the course of a human lifetime but in the course of time, as defined by this river, it's happening very, very quickly. Two canaries in the coal mine.

First one is in the Arctic. This, of course, is the Arctic Ocean, the floating ice cap. Greenland, on its side there. I say canary in the coal mine because the Arctic is one of the two regions of the world that is experiencing faster impacts from global warming. from global warming. This is the largest ice shelf in the Arctic, the Ward Hunt Ice Shelf. It just cracked in half three years ago. The scientists were astonished. These are called drunken trees just going every which way. This is not caused by wind damage or alcohol consumption. These trees put their roots down in the permafrost, and the permafrost is thawing. And so they just go every which way now. This building was built on the permafrost and has collapsed as the permafrost thaws. This woman's house has had to be abandoned. The pipeline is suffering a great deal of structural damage. And incidentally, the oil that they want to produce in that protected area in Northern Alaska, which I hope they don't, they have to depend on trucks to go in and out of there. And the trucks go over the frozen ground.

This shows the number of days that the tundra in Alaska is frozen enough to drive on it. Thirty-five years ago, 225 days a year. Now it's below 75 days a year because the spring comes earlier and the fall comes later and the temperatures just keep on going up. I went up to the North Pole. I went under that ice cap in a nuclear submarine that surfaced through the ice like this. Since they started patrolling in 1957, they have gone under the ice and measured with their radar looking upwards to measure how thick it is because they can only surface in areas where it's three and a half feet thick or less. So they have kept a meticulous record and they wouldn't release it because it was national security. I went up there in order to persuade them to release it, and they did. And here's what that record shows. Starting in 1970, there was a precipitous drop-off in the amount and extent and thickness of the Arctic ice cap.

It has diminished by 40% in 40 years. And there are now two major studies showing that within the next 50 to 70 years, in summertime it will be completely gone. Now, you might say,

"Why is that a problem?"

And "How could the Arctic ice cap actually melt so quickly?"

When the sun's rays hit the ice, more than 90% of it bounces off right back into space like a mirror. But when it hits the open ocean, more than 90% of it is absorbed. And so, as the surrounding water gets warmer, it speeds up the melting of the ice. Right now, the Arctic ice cap acts like a giant mirror. All the sun's rays bounce off, more than 90%. It keeps the Earth cooler. But as it melts and the open ocean receives that sun's energy instead, more than 90% is absorbed. So there is a faster buildup of heat here, at the North Pole, in the Arctic Ocean, and the Arctic generally than anywhere else on the planet. That's not good for creatures like polar bears who depend on the ice. A new scientific study shows that for the first time they're finding polar bears that have actually drowned, swimming long distances, up to 60 miles, to find the ice.

And they didn't find that before. But what does it mean to us? To look at a vast expanse of open water at the top of our world that used to be covered by ice. We ought to care a lot because it has planetary effects. The Earth's climate is like a big engine for redistributing heat from the equator to the poles. And it does that by means of ocean currents and wind currents. They tell us, the scientists do, that the Earth's climate is a nonlinear system. Just a fancy way they have of saying that the changes are not all just gradual. Some of them come suddenly, in big jumps. On a worldwide basis, the annual average temperature is about 58 degrees Fahrenheit. If we have an increase of five degrees, which is on the low end of the projections, look at how that translates globally. That means an increase of only one degree at the equator, but more than 12 degrees at the pole. And so all those wind and ocean current patterns that have formed since the last ice age and have been relatively stable, they're all up in the air and they change. And one of the ones they're most worried about, where they've spent a lot of time studying the problem, is in the North Atlantic where the Gulf Stream comes up and meets the cold winds coming off the Arctic over Greenland. And that evaporates so that the heat out of the Gulf Stream and the steam is carried over to Western Europe by the prevailing winds and the Earth's rotation. But isn't it interesting that the whole ocean current system is all linked together in this loop?

They call it the ocean conveyor. And the red are the warm surface currents. The Gulf Stream is the best known of them. But the blue represent the cold currents running in the opposite direction, and we don't see them at all because they run along the bottom of the ocean. Up in the North Atlantic, after that heat is pulled out, what's left behind is colder water and saltier water because the salt doesn't go anywhere. And so that makes it denser and heavier. And so that cold, dense, heavy water sinks at the rate of five billion gallons per second. And then that pulls that current back south. At the end of the last ice age, as the last glacier was receding from North America, as the last glacier was receding from North America, the ice melted and a giant pool of fresh water formed in North America. And the Great Lakes are the remnants of that huge lake. An ice dam on the eastern border formed and one day it broke.

And all that fresh water came rushing out, ripping open the St. Lawrence there, and it diluted the salty, dense, cold water, made it fresher and lighter, so it stopped sinking. And that pump shut off. And the heat transfer stopped. And Europe went back into an ice age for another 900 to 1,000 years. And the change from conditions like we have here today to an ice age took place in perhaps as little as 10 years' time. So that's a sudden jump. Now, of course that's not gonna happen again because the glaciers of North America are not there, and...

Is there any other big chunk of ice anywhere near there?

Oh, yeah.

We'll come back to that one. It's extremely frustrating to me to communicate over and over again, as clearly as I can. And we are still, by far, the worst contributor to the problem. And I look around and look for really meaningful signs that we're about to really change. I don't see it right now. A number of very reputable scientists have said that one factor of air pollution is oxides of nitrogen from decaying vegetation. This is what causes the haze that gave the big Smoky Mountains their name.

Thank you very much, okay.

This guy is so far off in the environmental extreme, we'll be up to our neck in owls and out of work for every American. This guy is crazy. Even if humans were causing global warming, and we are not, this could be maybe the greatest hoax ever perpetrated on the American people. We're dealing with something that's highly emotional. If an issue is not on the tips of their constituents' tongues, it's easy for them to ignore it.

To say, "Well, we'll deal with that tomorrow."

So the same phenomena of changing all these patterns is also affecting the seasons. Here is a study from the Netherlands. The peak arrival date for migratory birds 25 years ago was April 25th, and their chicks hatched on June the 3rd. Just at the time when the caterpillars were coming out. Nature's plan. But 20 years of warming later, the caterpillars peaked two weeks earlier, and the chicks tried to catch up with it, but they couldn't. And so, they're in trouble. And there are millions of ecological niches that are affected by global warming in just this way. This is the number of days with frost in Southern Switzerland over the last 100 years.

It has gone down rapidly. But now watch this. This is the number of invasive exotic species that have rushed in to fill the new ecological niches that are opening up. That's happening here in the United States, too. You've heard of the pine beetle problem? Those pine beetles used to be killed by the cold winters, but there are fewer days of frost, and so the pine trees are being devastated. This is part of 14 million acres of spruce trees in Alaska that have been killed by bark beetles. The exact same phenomenon. There are cities that were founded because they were just above the mosquito line. Nairobi is one, Harare is another. There are plenty of others. Now the

mosquitoes, with warming, are climbing to higher altitudes. There are a lot of vectors for infectious diseases that are worrisome to us that are also expanding their range. Not only mosquitoes, but all of these others as well.

And we've had 30 so-called new diseases that have emerged just in the last quarter century. And a lot of them, like SARS, have caused tremendous problems. The resistant forms of tuberculosis. There are others. And there's been a re-emergence of some diseases that were once under control. The avian flu, of course, quite a serious matter, as you know. West Nile Virus. It came to the eastern shore of Maryland in 1999. Two years later, it was across the Mississippi. And two years after that, it had spread across the continent. But these are very troubling signs. Coral reefs all over the world, because of global warming and other factors, are bleaching and they end up like this. And all the fish species that depend on the coral reefs are also in jeopardy as a result. Overall, species loss is now occurring at a rate 1,000 times greater than the natural background rate. This brings me to the second canary in the coal mine. Antarctica. The largest mass of ice on the planet by far.

A friend of mine said in 1978, "If you see the breakup of ice shelves along the Antarctic peninsula, "watch out "because that should be seen as an alarm bell for global warming." And actually, if you look at the peninsula up close, every place where you see one of these green blotches here is an ice shelf larger than the state of Rhode Island that has broken up just in the last 15 to 20 years. I want to focus on just one of them. It's called Larsen B. I want you to look at these black pools here. It makes it seem almost as if we're looking through the ice to the ocean beneath. But that's an illusion. This is melting water that forms in pools and if you were flying over it in a helicopter, you'd see it's 700 feet tall.

They are so majestic, so massive. In the distance are the mountains and just before the mountains is the shelf of the continent, there. This is floating ice, and there's land-based ice on the down slope of those mountains. From here to the mountains is about 20 to 25 miles. Now they thought this would be stable for at least 100 years, even with global warming. The scientists who study these ice shelves were absolutely astonished when they were looking at these images. Starting on January 31, 2002 in a period of 35 days this ice shelf completely disappeared. They could not figure out how in the world this happened so rapidly. And they went back to try to figure out where they'd gone wrong. And that's when they focused on those pools of melting water.

But even before they could figure out what had happened there, something else started going wrong. When the floating sea-based ice cracked up, it no longer held back the ice on the land, and the land-based ice then started falling into the ocean. It was like letting the cork out of a bottle. And there's a difference between floating ice and land-based ice. That's like the difference between an ice cube floating in a glass of water, which when it melts doesn't raise the level of water in the glass, and a cube that's sitting atop a stack of ice cubes which melts and flows over the edge. That's why the citizens of these Pacific nations have all had to evacuate to New

Zealand. But I want to focus on West Antarctica because it illustrates two factors about land-based ice and sea-based ice.

It's a little of both. It's propped up on tops of islands, but the ocean comes up underneath it. So as the ocean gets warmer, it has an impact on it. If this were to go, sea level worldwide would go up 20 feet. They've measured disturbing changes on the underside of this ice sheet. It's considered relatively more stable, however, than another big body of ice that's roughly the same size.

Greenland would also raise sea level almost 20 feet if it went. A friend of mine just brought back some pictures of what's going on on Greenland right now. Dramatic changes. These are the same kinds of pools that formed here, on this ice shelf in Antarctica. And the scientists thought that when that water seeped back into the ice, it would just refreeze.

But they found out that actually what happens is that it just keeps on going. It tunnels to the bottom and makes the ice like Swiss cheese, sort of like termites. This shows what happens to the crevasses, and when lakes form, they create what are called moulins. The water goes down to the bottom and it lubricates where the ice meets the bedrock. See these people here for scale. This is not on the edge of Greenland, this is in the middle of the ice mass. This is a massive rushing torrent of fresh melt water tunneling straight down through the Greenland ice to the bedrock below. Now, to some extent, there has always been seasonal melting and moulins have formed in the past, but not like now.

In 1992, they measured this amount of melting in Greenland. Ten years later, this is what happened. And here is the melting from 2005. Tony Blair's scientific advisor has said that because of what's happening in Greenland right now, the maps of the world will have to be redrawn. If Greenland broke up and melted, or if half of Greenland and half of West Antarctica broke up and melted, this is what would happen to the sea level in Florida. This is what would happen to San Francisco Bay. A lot of people live in these areas. The Netherlands, one of the low countries. Absolutely devastating. The area around Beijing that's home to tens of millions of people. Even worse, in the area around Shanghai, there are 40 million people. Worse still, Calcutta, and to the east, Bangladesh, the area covered includes 60 million people.

Think of the impact of a couple hundred thousand refugees when they're displaced by an environmental event. And then imagine the impact of a hundred million or more. Here's Manhattan. This is the World Trade Center memorial site. And after the horrible events of 9/11, we said, "Never again."

We said, "Never again."

But this is what would happen to Manhattan. They can measure this precisely, just as the scientists could predict precisely how much water would breach the levees in New Orleans. The area where the World Trade Center Memorial is to be located would be underwater. Is it possible that we should prepare against other threats besides terrorists? Maybe we should be concerned

about other problems as well. 1.3 billion people. An economy that's surging. More and more energy needs. Massive coal reserves. The coal belt in Northern China,

- Inner Mongolia.

- Right.

Then there's Shaanxi province.

- And also biggest coal mine here.

- Up here.

- Yeah.

- Now, is that an open pit mine?

- Yes.

- Yes.

Every time I've visited China, I've learned from their scientists. They're right on the cutting edge. Give me some sense of the numbers of new coal fire generating plants. Well, I have to say that the number is enormous because it's so profitable. This issue is really the same for China as it is for the US. We are both using old technologies that are dirty and polluting. ...more flooding and more drought and stronger storms is going up, and global warming is implicated in the pattern. And if you were to give some suggestions to everybody here about, like, what we can do for the situation now. Separating the truth from the fiction and the accurate connections from the misunderstandings is part of what you learn here.

But when the warnings are accurate and based on sound science, then we as human beings, whatever country we live in, have to find a way to make sure that the warnings are heard and responded to. We both have a hard time shaking loose the familiar patterns that we've relied on in the past. We both face completely unacceptable consequences. And there are three factors that are causing this collision, and the first is population. When my generation, the baby boom generation, was born after World War II, the population had just crossed the two billion mark. Now, I'm in my 50s, and it's already gone to almost six and a half billion. And if I reach the demographic expectation for the baby boomers, it'll go over nine billion. So if it takes 10,000 generations to reach two billion and then in one human lifetime, ours, it goes from two billion to nine billion, something profoundly different's going on right now. We're putting more pressure on the Earth. Most of it's in the poorer nations of the world. This puts pressure on food demand. It puts pressure on water demand. It puts pressure on vulnerable natural resources, and this pressure's one of the reasons why we have seen all the devastation of the forest, not only tropical, but elsewhere. It is a political issue.

This is the border between Haiti and the Dominican Republic. One set of policies here, another set of policies here. Much of it comes not only because of cutting, but also burning. Almost 30%

of all the CO₂ that goes up each year into the atmosphere comes from forest burning. This is a time-lapse picture of the Earth at night over a six-month period showing the lights of the cities in white and the burning forests and brush fires in red. The yellow areas are the gas flares, like these in Siberia. And that brings me to the second factor that has transformed our relationship to the Earth. The scientific and technological revolution is a great blessing in that it has given us tremendous benefits in areas like medicine and communications. But this new power that we have also brings a responsibility to think about its consequences. Here's a formula to think about. Old habits plus old technology have predictable consequences. Old habits that are hard to change plus new technology can have dramatically altered consequences. Warfare with spears and bows and arrows and rifles and machine guns, that's one thing. But then a new technology came. We have to think differently about war because the new technologies so completely transformed the consequences of that old habit that we can't just mindlessly continue the patterns of the past. In the same way, we have always exploited the Earth for sustenance.

For most of our existence, we used relatively simple tools. The plow, the tractor. But even tools like shovels are different now. Shovel used to be this. Shovels have gotten bigger. And every year, they get more powerful. So our ability to have an effect, in this case on the surface of the Earth, is utterly transformed. You can say the same thing about irrigation, which is a great thing. But when we divert rivers without considering the consequences, then sometimes rivers no longer reach the sea. There were two rivers in Central Asia that were used by the former Soviet Union for irrigating cotton fields unwisely. The Aral Sea was fed by them. It used to be the fourth largest inland sea in the world. When I went there, I saw this strange sight of an enormous fishing fleet resting in the sand. This is the canal that the fishing industry desperately tried to build to get to the receding shoreline. Making mistakes in our dealings with nature can have bigger consequences now because our technologies are often bigger than the human scale. When you put them all together, they've made us a force of nature. And this is also a political issue. This is a computer map of the world that distorts to show the relative contributions to global warming. In our country, we are responsible for more than all of South America, all of Africa, all of the Middle East, all of Asia, all combined. The per capita average in Africa, India, China, Japan, EU, Russia. There's where we are.

Way, way above everyone else. If you take population into account, it's a little bit different. China's playing a bigger role, so is Europe. But we are still by all odds the largest contributor. And so it is up to us to look at how we think about it, because our way of thinking is the third and final factor that transforms our relationship to the Earth. If a frog jumps into a pot of boiling water, it jumps right out again because it senses the danger. But the very same frog, if it jumps into a pot of lukewarm water that is slowly brought to a boil, will just sit there and it won't move. It'll just sit there, even as the temperature continues to go up and up. It'll stay there, until... Until it's rescued. It's important to rescue the frog. But the point is this. Our collective nervous system is like that frog's nervous system. It takes a sudden jolt sometimes before we become aware of a danger. If it seems gradual, even if it really is happening quickly, we're capable of just sitting there and not responding. And not reacting. I don't remember a time when I was a kid when summertime didn't mean working with tobacco. It was just... I used to love it. It was during that period when working with the guys on the farm seemed like fun to me. Starting in 1964, with the Surgeon General's report, the evidence was laid out on the connection between smoking cigarettes and lung cancer.

We kept growing tobacco. Nancy was almost 10 years older than me, and there were only the two of us. She was my protector and my friend at the same time. She started smoking when she was a teenager and never stopped. She died of lung cancer. That's one of the ways you don't want to die. The idea that we had been part of that economic pattern that produced the cigarettes, that produced the cancer, it was so... It was so painful on so many levels. My father, he had grown tobacco all his life. He stopped. Whatever explanation had seemed to make sense in the past, just didn't cut it anymore. He stopped it. It's just human nature to take time to connect the dots. I know that. But I also know that there can be a day of reckoning when you wish you had connected the dots more quickly. There are three misconceptions in particular that bedevil our thinking. First, isn't there a disagreement among scientists about whether the problem is real or not? Actually, not really. There was a massive study of every scientific article in a peer-reviewed journal written on global warming for the last 10 years. And they took a big sample of 10%, 928 articles.

And you know the number of those that disagreed with the scientific consensus that we're causing global warming and that it's a serious problem? Out of the 928, zero. The misconception that there's disagreement about the science has been deliberately created by a relatively small group of people. One of their internal memos leaked. And here's what it said, according to the press. Their objective is to reposition global warming as theory rather than fact. This has happened before. After the Surgeon General's report. One of their memos leaked 40 years ago. Here's what they said. "Doubt is our product, "since it is the best means of creating a controversy in the public's mind." But have they succeeded? You'll remember that there were 928 peer-reviewed articles. Zero percent disagreed with the consensus. There was another study of all the articles in the popular press.

Over the last 14 years, they looked at a sample of 636. More than half of them said, "Well, we're not sure. It could be a problem, may not be a problem." So no wonder people are confused. Hey. What did you find out? Working for who? Chief of Staff? I'm gonna... That's the White House environment office. American Petroleum Institute. It's fair to say that's the oil and gas lobby. Is that fair? Totally fair. Do a little bit more and see who his clients were. So he was defending the Exxon Valdez thing. Uh, very. Thank you. Scientists have an independent obligation to respect and present the truth as they see it. Why do you directly contradict yourself in the testimony you're giving about this scientific question? The last paragraph in that section was not a paragraph which I wrote.

That was added to my testimony. If they force you to change a scientific conclusion, it's a form of science fraud by them. You know, in the Soviet Union, ordering scientists to change their studies to conform with the ideology... I've seen scientists who were persecuted, ridiculed, deprived of jobs, income, simply because the facts they discovered led them to an inconvenient truth that they insisted on telling. He worked for the American Petroleum Institute. And in January of 2001, he was put by the president in charge of environmental policy. He received a memo from the EPA that warned about global warming and he edited. He has no scientific training whatsoever. But he took it upon himself to overrule the scientist. I said, "I want to see what this guy's handwriting looks like." This is the memo from the EPA. These are his actual pen strokes. He says, "No, you can't say this. This is just speculation." This was embarrassing to the

White House, so this fellow resigned a few days later. And the day after he resigned, he went to work for Exxon Mobil. You know, more than 100 years ago, Upton Sinclair wrote this. That it's difficult to get a man to understand something if his salary depends upon his not understanding it. The second misconception. Do we have to choose between the economy and the environment? This is a big one.

Lot of people say we do. I was trying to convince the previous administration, the first Bush administration, to go to the Earth Summit. And they organized a big White House conference to say, "Oh, we're on top of this." And one of these view graphs caught my attention. And I want to talk to you about it for a minute. Now here is the choice that we have to make according to this group. We have here a scales that balances two different things. On one side, we have gold bars. Don't they look good? I'd just like to have some of those gold bars. On the other side of the scales, the entire planet. I think this is a false choice for two reasons. Number one, if we don't have a planet... The other reason is that if we do the right thing, then we're gonna create a lot of wealth and we're gonna create a lot of jobs. - Yes. Because doing the right thing moves us forward. I've probably given this slide show 1,000 times. I would say, at least 1,000 times. Nashville to Knoxville to Aspen and Sundance.

Los Angeles and San Francisco. Portland, Minneapolis, Boston, New Haven, London, Brussels, Stockholm, Helsinki, Vienna, Munich, Italy and Spain and China, South Korea, Japan. Thank you. I guess the thing I've spent more time on than anything else in this slide show is trying to identify all those things in people's minds that serve as obstacles to them understanding this. And whenever I feel like I've identified an obstacle, I try to take it apart, roll it away. Move it. Demolish it, blow it up. I set myself a goal. Communicate this real clearly. The only way I know to do it is city by city, person by person, family by family. Bye-bye. Thank you again. Bye. And I have faith that pretty soon enough minds are changed that we cross a threshold. Let me give you an example of the wrong way to balance the economy and the environment. One part of this issue involves automobiles. Japan has mileage standards up here. Europe plans to pass Japan.

Our allies in Australia and Canada are leaving us behind. Here is where we are. Now there's a reason for it. They say that we can't protect the environment too much without threatening the economy and threatening the automakers. Because automakers in China might come in and just steal all our markets. Well, here is where China's auto mileage standards are now. Way above ours. We can't sell our cars in China today because we don't meet the Chinese environmental standards. California has taken an initiative to have higher-mileage cars sold in California. Now the auto companies have sued California to prevent this law from taking effect because, as they point out, 11 years from now this would mean that California would have to have cars for sale that are as efficient 11 years from now as China's are today. Clearly too onerous a provision to comply with. And is this helping our companies succeed?

Well, actually, if you look at who's doing well in the world, it's the companies that are building more-efficient cars. And our companies are in deep trouble. Final misconception. If we accept that this problem is real, maybe it's just too big to do anything about. And, you know, there are a lot of people who go straight from denial to despair without pausing on the intermediate step of actually doing something about the problem. And that's what I'd like to finish with. The fact that we already know everything we need to know to effectively address this problem. We've got to

do a lot of things, not just one. If we use more efficient electricity appliances, we can save this much off of the global warming pollution that would otherwise be put into the atmosphere. If we use other end-use efficiency, this much. If we have higher mileage cars, this much. And all these begin to add up. Other transport efficiency, renewable technology, carbon capture and sequestration. A big solution that you're gonna be hearing a lot more about. They all add up, and pretty soon we are below our 1970 emissions.

We have everything we need, save perhaps political will. But you know what? In America, political will is a renewable resource. We have the ability to do this. Each one of us is a cause of global warming, but each of us can make choices to change that. With the things we buy, the electricity we use, the cars we drive, we can make choices to bring our individual carbon emissions to zero. The solutions are in our hands. We just have to have the determination to make them happen. Are we gonna be left behind as the rest of the world moves forward? All of these nations have ratified Kyoto. There are only two advanced nations in the world that have not ratified Kyoto, and we are one of them. The other is Australia. Luckily, several states are taking the initiative. The nine northeastern states have banded together on reducing CO₂. California and Oregon are taking the initiative. Pennsylvania's exercising leadership on solar power and wind power. And US cities are stepping up to the plate. One after the other, we have seen all of these cities pledge to take on global warming.

So what about the rest of us? Ultimately this question comes down to this. Are we, as Americans, capable of doing great things even though they are difficult? Are we capable of rising above ourselves and above history? Well, the record indicates that we do have that capacity. We formed a nation, we fought a revolution and brought something new to this Earth, a free nation guaranteeing individual liberty. America made a moral decision. Its slavery was wrong, and that we could not be half free and half slave. We, as Americans, decided that of course women should have the right to vote. We defeated totalitarianism and won a war in the Pacific and the Atlantic simultaneously. We desegregated our schools. And we cured fearsome diseases like polio. We landed on the moon. The very example of what's possible when we are at our best. We worked together in a completely bipartisan way to bring down communism.

We have even solved a global environmental crisis before, the hole in the stratospheric ozone layer. This was said to be an impossible problem to solve because it's a global environmental challenge requiring cooperation from every nation in the world. But we took it on. And the United States took the lead in phasing out the chemicals that caused that problem. So now we have to use our political processes in our democracy, and then decide to act together to solve those problems. But we have to have a different perspective on this one. It's different from any problem we have ever faced before. You remember that home movie of the Earth spinning in space? One of those spacecraft continuing on out into the universe, when it got four billion miles out in space, Carl Sagan said, "Let's take another picture of the Earth."

You see that pale blue dot? That's us. Everything that has ever happened in all of human history has happened on that pixel. All the triumphs and all the tragedies. All the wars, all the famines. All the major advances. It's our only home. And that is what is at stake. Our ability to live on planet Earth, to have a future as a civilization. I believe this is a moral issue. It is your time to seize this issue. It is our time to rise again, to secure our future. There's nothing that unusual

about what I'm doing with this. What is unusual is that I had the privilege to be shown it as a young man. Ladies and gentlemen, Mr. Al Gore. It's almost as if a window was opened through which the future was very clearly visible. "See that?" he said, "See that? That's the future in which you are going to live your life." Future generations may well have occasion to ask themselves, "What were our parents thinking? Why didn't they wake up when they had a chance?" We have to hear that question from them, now.

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